

Projects	Principal Investigator	Co-investigators
Cost-effective sustainable wastewater treatment technology: Industrial Wastewater Treatment	Liu, Yang	Sheng, Zhiya (RA)
Cost-effective sustainable wastewater treatment technology: Centrate-Lagoon Supernatant Treatment	Sheng, Zhiya (RA)	Liu, Yang
Development of an Adaptive Monitoring and Management Framework for Environmental Substances of Concern (ESOCs) in Wastewater	Munkittrick, Kelly	Wrona, Fred
		Black, Kerry
		Arlos, Maricor Jane
		Kidd, Karen
		Martyniuk, Chris
ESOCs Subproject 1 - Basal Food Web Structure and Productivity in the Presence of MWWE		Wrona, Fred
ESOCs Subproject 2 - Introduced via Wastewater and Changes in Microbiome/Food Web		Kidd, Karen

ESOCs Subproject 3 - Assessing the fate and transport of wastewater-derived ESOCs in riverine environments and their bioaccumulation in aquatic organisms: An analysis of source-to-dose continuum		Arlos, Maricor
		Servos, Mark
ESOCs Subproject 4 - Development of molecular indicators for adverse health responses of effluent exposure in caged fathead minnow (<i>Pimephales promelas</i>) in ACWA raceways		Margan, Patricija
ESOCs Subproject 5 - Quantifying between-species differences in reproductive responses in the presence of municipal wastewater effluent		Tanna, Neal
Characterization of microplastics in wastewater influent, effluent and biosolids	Achari, Gopal	Jackson, Leland
	Rogers, Sean	
Large-Scale Data Analysis and AI Modelling for Efficiency of Biological Treatment at the Pine Creek Wastewater Treatment Plant	Achari, Gopal	Krishnamurthy, Diwakar
Wastewater Surveillance of SARS-COV2 to Enable Real-Time Clinical Case-Finding in Calgary	Parkins, Michael	Hubert, Casey (co-PI)
		Conly, John
		Meddings, Jon
		Achari, Gopal
		Cabaj, Jason

		Hu, Jia
		Naugler, Christopher
		Pillai, Dylan
		Ryan, Cathryn
Potable Water Reuse Demonstration Project	Jackson, Leland	O'Grady, Christine
		Frankowski, Kevin
AMR Project A - Does antibiotic use and wastewater treatment encourage the development of antimicrobial resistance?	Jackson, Leland	Achari, Gopal
(supports 6 thesis subprojects, see below)		Dong, Tao
AMR Project B - Evidence for the evolution of water treatment-resistant pathogenic <i>E. coli</i> – are we on the cusp of a public health crisis?	Jackson, Leland	Achari, Gopal
(supports 6 thesis subprojects, see below)		Dong, Tao
		Neuman, Norm
AMR Subproject 1 - Determination of water treatment (Cl-, UV and O3) resistance of isolates from wastewater treatment plants of Alberta by examining dose and contact times and associated disinfection kinetics at bench and pilot scale	Jackson, Leland	Achari, Gopal
		Dong, Tao

<p>AMR Subproject 2 - Expand current collections of E. coli pathotypes from wastewater treatment plants and determine genomic stress-resistance features contributing to water treatment resistance, including antibiotic resistance</p>	<p>Jackson, Leland</p>	<p>Achari, Gopal</p>
		<p>Dong, Tao</p>
		<p>Neuman, Norm</p>
<p>AMR Subproject 3 - Determine environmental transmission and persistence of these isolates in receiving environments by evaluating the environmentally-persistent nature of these isolates, whether they act as a reservoir for horizontal gene transmission with other environmental microbes to enhance their own environmental persistence.</p>	<p>Jackson, Leland</p>	<p>Achari, Gopal</p>
		<p>Dong, Tao</p>

AMR Subproject 4 - Develop a bioinformatic database on the 'stressome' of selected isolates, such as E. coli, to understand the genetic characteristics that contribute to their evolved resistance phenotype and gene targets that are candidate markers to track the emergence of water treatment resistance.	Jackson, Leland	Achari, Gopal
		Dong, Tao
		Neuman, Norm

<p>AMR Subproject 5 - Contrast the degree of antibiotic resistance in municipal wastewater and agricultural (dairy and beef production) operations to add agriculture, companion animals and environmental waters to existing surveillance systems that have been established.</p>	<p>Jackson, Leland</p>	<p>Achari, Gopal</p>
<p>AMR Subproject 6 - Determine whether the presence of antimicrobial resistance elements actually confers resistance to those elements in environmental samples.</p>	<p>Jackson, Leland</p>	<p>Dong, Tao</p> <p>Achari, Gopal</p>
		<p>Dong, Tao</p>

Application of high strength wastewater-derived volatile fatty acid for enhancing biological nutrient removal	Chu, Angus	Tay, Andrew
Metagenomic diversity in river and WWTP water	Lynch, Tarah	
Implementation of a data collaboration platform	Jackson, Leland	
Assessment of wastewater for the presence of chelating agents	Jürgen Gailer	
Development of an analytical method to determine the Total Organic Halogen (TOX) content in drinking and waste water and evaluate the disinfection by-product (DBP) formation of a new advanced oxidation system (AOS) developed by BioLargo Water	Kimura-Hara, Susana	
Method development for cannabis metabolites	Jackson, Leland	Kuzma, Darina
		Scott, Andrea
		Kormendi, Aleshia
Municipal wastewater effluent impacts on native fish: mechanisms of action and BIOMIC signatures	Vijayan, Matt	
Effects of environmental contaminants on testicular gametogenesis	Habibi, Hamid	
Paracrine control of testicular development	Habibi, Hamid	

Probiotic modulation of metabolic disruption caused by BPA and herbicides in zebrafish	Habibi, Hamid	Carnevali, Oliana
Probiotic modulation of metabolic disruption caused by BPA and herbicides in zebrafish	Habibi, Hamid	Carnevali, Oliana
Thyroid hormone control of testicular development.	Habibi, Hamid	Nobrega, R
Thyroid hormone control of testicular development.	Habibi, Hamid	Nobrega, R
Development and application of an eDNA method	Rogers, Sean	
Contaminant fate, transformation products and disinfection by-products from reclaimed wastewaters	Kimura-Hara, Susana	
Biological nutrient removal integrating anaerobic-aerobic granulation	Tay, Andrew	
MPP software and training	Jackson, Leland	Kuzma, Darina
Analytical ACWA background data	Jackson, Leland	Kuzma, Darina
		Scott, Andrea
		Saowapon, Matthew
		Kormendi, Aleshia
		Moe, Jessica
MWWE exposure causes multigenerational effects on growth and stress performance in fathead minnows and this involves epigenetic modifications	Vijayan, Matt	
Method development for phthalates	Jackson, Leland	Kuzma, Darina
		Moe, Jessica
		Saowapon, Matthew
Method development for nitrosamines	Jackson, Leland	Kuzma, Darina
		Scott, Andrea
Development of a data collaboration platform	Jackson, Leland	

Method development for hormones/pharmaceuticals	Jackson, Leland	Kuzma, Darina
Characterization of the microbiome colonizing advanced wastewater treatment membranes	Jackson, Leland	Whalen, Pat
Toxicity of waterborn Cylindrospermopsin in fish	Habibi, Hamid	Magalhaes V.
Zearalenone induced embryo and neurotoxicity in zebrafish model (<i>Danio rerio</i>): role of oxidative stress	Habibi, Hamid	
Development of an Integrated technology for the removal of emerging contaminants from wastewater	Achari, Gopal	Tay, Andrew
Developing high throughput behavioural assays in fish for screening the neurotoxic effects of emerging contaminants in MWWE	Vijayan, Matt	
Adverse Impacts of Sulfolane on Development of Zebrafish (<i>Danio rerio</i>) Embryos	Habibi, Hamid	
	Achari, Gopal	
Effects of Contaminants of emerging concern on obesity and metabolism	Habibi, Hamid	Carnevali, Oliana
Effects of Di-Isononyl Phthalate on the Endocannabinoid System and on the Endocannabinoid System Liver of Female Zebrafish	Habibi, Hamid	
	Carnevali, Oliana	
Effects of environmental contaminants on fish reproduction	Habibi, Hamid	
	Carnevali, Oliana	

Treating Emerging Contaminants of Concern using Advanced Oxidative products	Achari, Gopal	Tay, Andrew
		Langford, C.
		Jackson L.
Treatment of emerging contaminants of concern using aerobic granular sludge	Tay, Andrew	
Advanced oxidation treatment methods for tertiary treatment of carbamazepine in WW effluents	Achari, Gopal	Tay, Andrew
Artificial intelligence simulation for innovative wastewater treatment technologies - aerobic granulation	Tay, Andrew	
	Achari, Gopal	
Colonization of new streams by periphyton and its response to variously treated wastewater	Jackson, Leland	
The use of <i>Chlamydomonas reinhardtii</i> as a model system to remove antibiotics from wastewater	Jackson, Leland	Alcantara, Joenel
Treatment of high strength wastewater in integrated anaerobic-aerobic granular bioreactor	Tay, Andrew	
Municipal wastewater effluent impact on native fish: mechanisms of action and biomic signatures	Vijayan, Matt	Jackson, Leland
		Ruecker, Norma
		Arnold, Victoria
Simultaneous nitrogen and phosphorus removal using aerobic granulation technology	Tay, Andrew	

Development of aerobic granular sludge membrane bioreactor to mitigate membrane fouling	Tay, Andrew	
Hormonal control of gonadal development in zebrafish	Habibi, Hamid	
Impact of environmental contaminants on testicular development	Habibi, Hamid	
Developing an analytical method for EDCs in water and wastewater	Arnold, Victoria	Ruecker, Norma
Fate of emerging contaminants in presence of biosolids	Achari, Gopal	Langford, Cooper
Municipal Waste Water Effluent Impact on Native Fish: Mechanisms of action and BIOMIC signatures	Vijayan, Matt	Habibi, Hamid
		Jackson, Leland
		McConkey, Brendan
		Harrison, JJ
Paracrine control of testicular development in zebrafish	Habibi, Hamid	Nobrega, R
Quantification of MoO4 in shallow prairie lakes in southern Alberta	Jackson, Leland	
Antibiotic profiling and genetic analysis of <i>E. coli</i> wastewater isolates	Dong, Tao	Norm Neumann
Assessing water quality, microbial risks and waterborne pathogens in rural Alberta using a One Health Framework/Antimicrobial resistant <i>E. coli</i> in Alberta's rural wells	Checkley, Sylvia	Louie, Marie

Assessing the isotopic composition of phosphate and nitrate in WWTP effluent	Mayer, Bernhard	
Advanced oxidative methods for degradation of emerging contaminants in municipal wastewaters	Achari, Gopal	Tay, Andrew
Development of nanocomposites for decontamination of emerging contaminants	Achari, Gopal	
Evaluation of Photo-assisted ozonation for degradation of venlafaxine in municipal wastewater	Achari, Gopal	
Evaluation of sulfolane oxidation by photolytic and aeration techniques	Achari, Gopal	
Photocatalytic Treatment of Organic Pollutants in Water	Achari, Gopal	
Study of the adverse effects of environmental contaminants on gene expression in fish	Habibi, Hamid	